Bliss

Making peaceful recoveries.

ICU Noise Reducing Bluetooth Alarm System

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The typical patient in the Intensive Care Unit (ICU) is connected to 6-12 physiologic monitors, 1-8 IV pumps, tube feeding delivery systems, and ventilators. Each device contains its own alarms that must be loud enough for staff to hear. Patients enduring these loud noises often develop delirium, stress, or panic attacks, which take a significant toll on their already vulnerable state. As a result, patient mortality rates and length of stay in the ICU increase. Staff is also inconvenienced by these alarms as they are limited by audible range and information regarding the severity of the alarm. Nurses lose valuable time having to respond to alarms that may not require immediate attention.

Our aim is to remove the irritating noise from the ICU by transmitting alarms wirelessly to a mobile handheld device, thereby improving the quality of life for these patients. To do this, we developed hardware that mimics an IV Pump (a common medical device) and Bliss, an Android application that alerts the user of the alarm triggered. Bliss provides the link between medical devices and nurses by behaving as a personal messaging system. Each nurse has an account in Bliss providing them with information regarding the patient's state. If an alarm on a patient's device is triggered, the nurse will receive an audible alarm on his/her handheld device notifying him/her which patient, medical device and alarm on the medical device was activated. Additional features include a scan to register new patients and medical devices, listing of active nurses and a chronological list of activated alarms. Using a system of Android platform devices with Bluetooth connection, we developed an improved method of managing alarms that benefits both patient health and nurse effectiveness.

Two boxes that simulate the same signals given off by alarm sensors of various medical devices (left) and Android application that receives the signals and displays the appropriate alarms (right)